

# Instream Flows in Washington

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*Washington  
Department of*  
**FISH and  
WILDLIFE**







## Overview

- WDFW Water Science Team
- Instream flows in WA
  - Legal authority
  - History
- Salmonid life history
- Habitat requirements
- Instream flow methods



## *Our Mission*

To preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities.

## *Vision*

Conservation of Washington's fish and wildlife resources and ecosystems.





*Protect and restore fish and wildlife habitat that depends on water quantity through water use management*

- Instream flow science and assessment
- Water right review
- Flow restoration
- Flow acquisition monitoring





# Instream Flows in Washington



- Water right for the stream, do not affect senior rights
- Set by WDOE with scientific guidance from WDFW
- Protect and restore habitat for fish and wildlife





## Federal Statute

- Clean water act
- Endangered species act

## State Statute

- Water code RCW 90.03.247
- Minimum water flows and levels Chapter 90.22 RCW
- Water resources act of 1971 Chapter 90.54 RCW
- Watershed planning act RCW 90.82.080
- Construction projects in state waters RCW 77.57.020

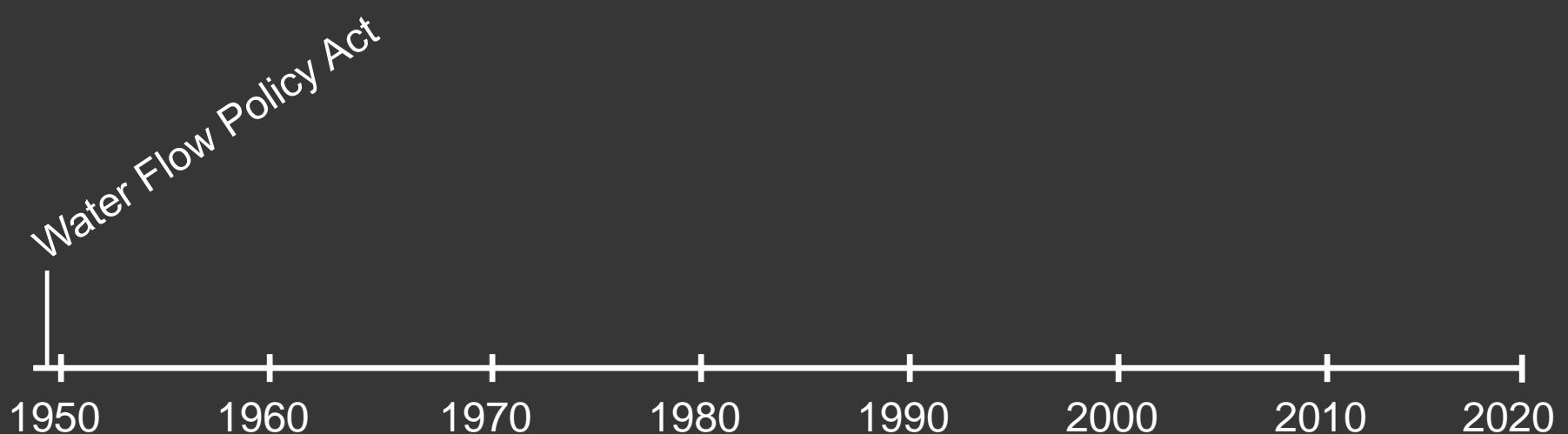


# Legacy of Instream Protection

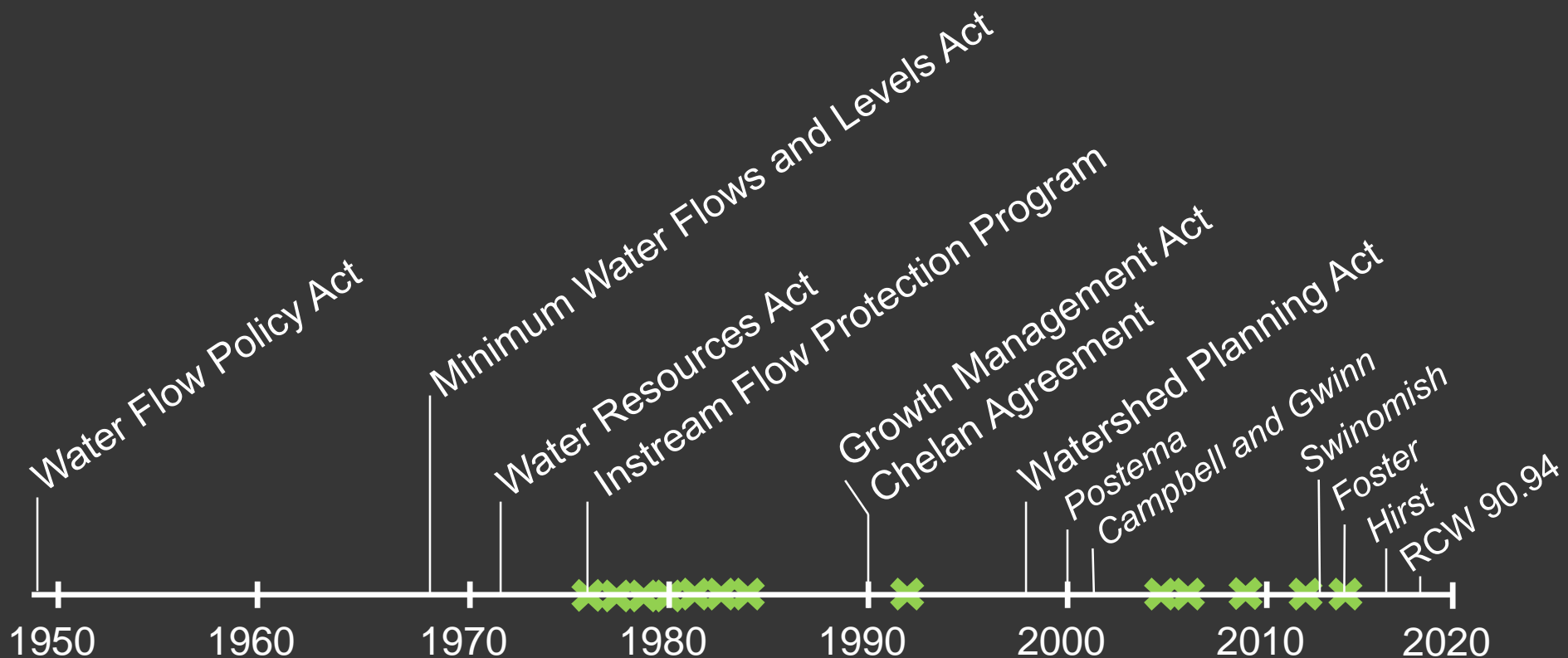


1949

Water Flow Policy Act: *“It is the policy of this state that a flow of water sufficient to support game fish and food fish populations be maintained at all times in the streams of this state”*



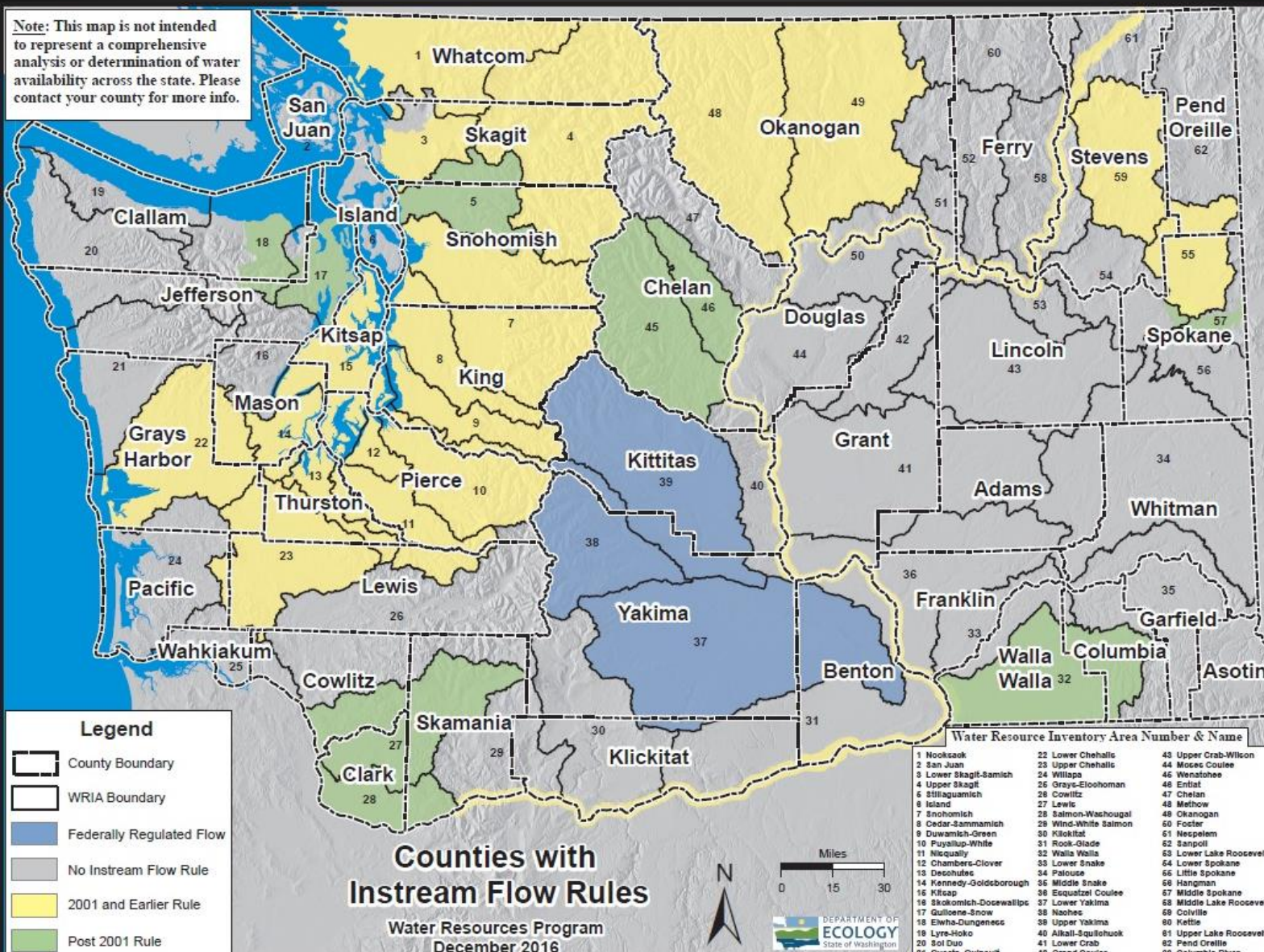
# Legacy of Instream Protection



x = One or more instream flow rules adopted into WAC



# Basins with Instream Flow Rules



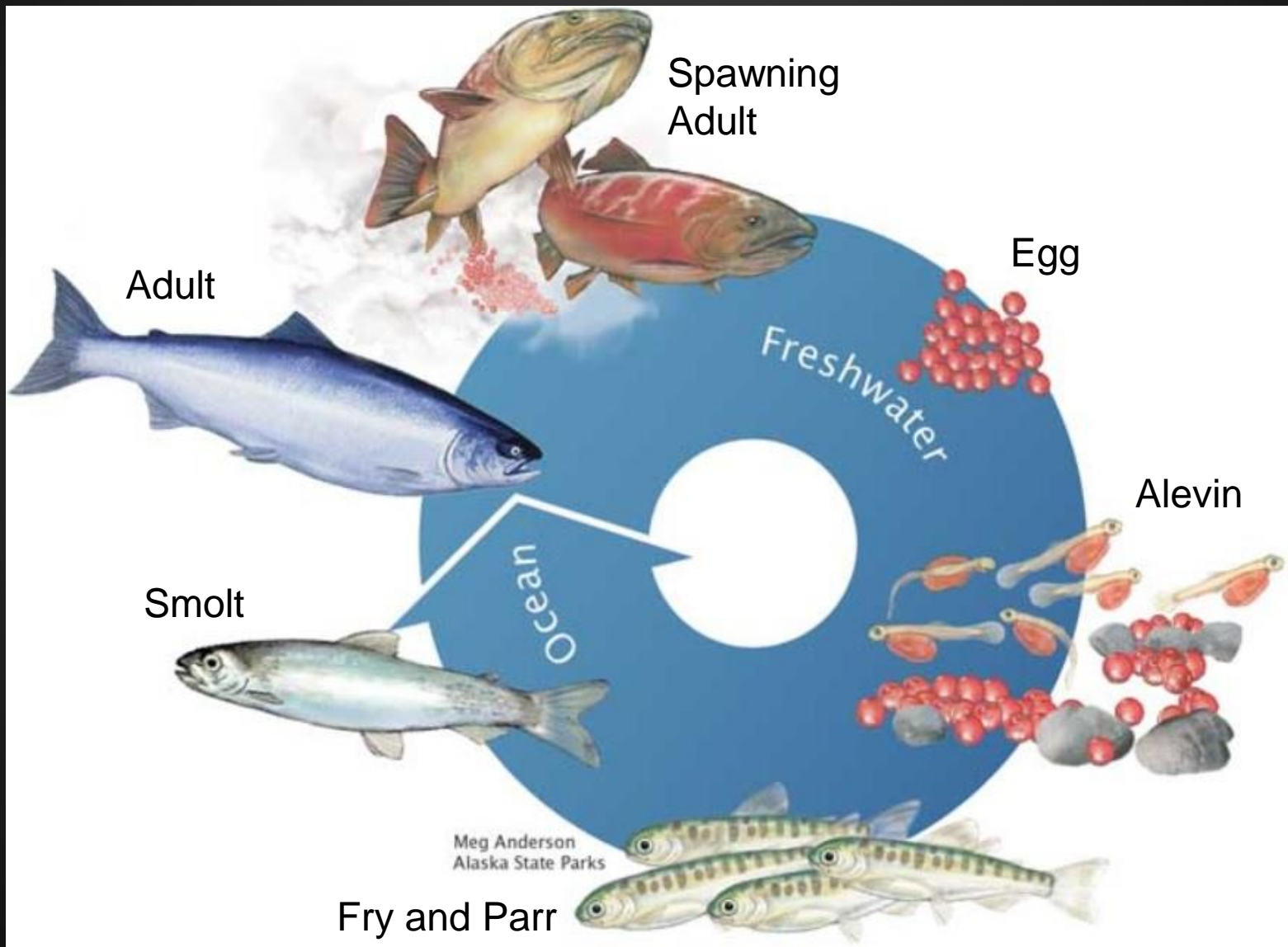
# Sea-run Salmonids and Char of WA



- Chinook (King) Salmon *Oncorhynchus tshawytscha*
- Coho (Silver) Salmon *Oncorhynchus kisutch*
- Pink (Humpy) Salmon *Oncorhynchus gorbuscha*
- Chum (Dog) Salmon *Oncorhynchus keta*
- Sockeye (Red) Salmon *Oncorhynchus nerka*
- Steelhead (Rainbow Trout) *Oncorhynchus mykiss*
- Cutthroat Trout (Coastal) *Oncorhynchus clarki clarki*
- Bull trout *Salvelinus confluentus*



# A complex life history



# Periodicity



Fish Species	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Big White Salmon River Fall (Tule) Chinook (ESA Threatened)</b>	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Big White Salmon River Spring Chinook (ESA Threatened)</b>	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Big White Salmon River Late Fall (Bright) Chinook (ESA Not Warranted)</b>	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												



# Technical studies to set instream flows

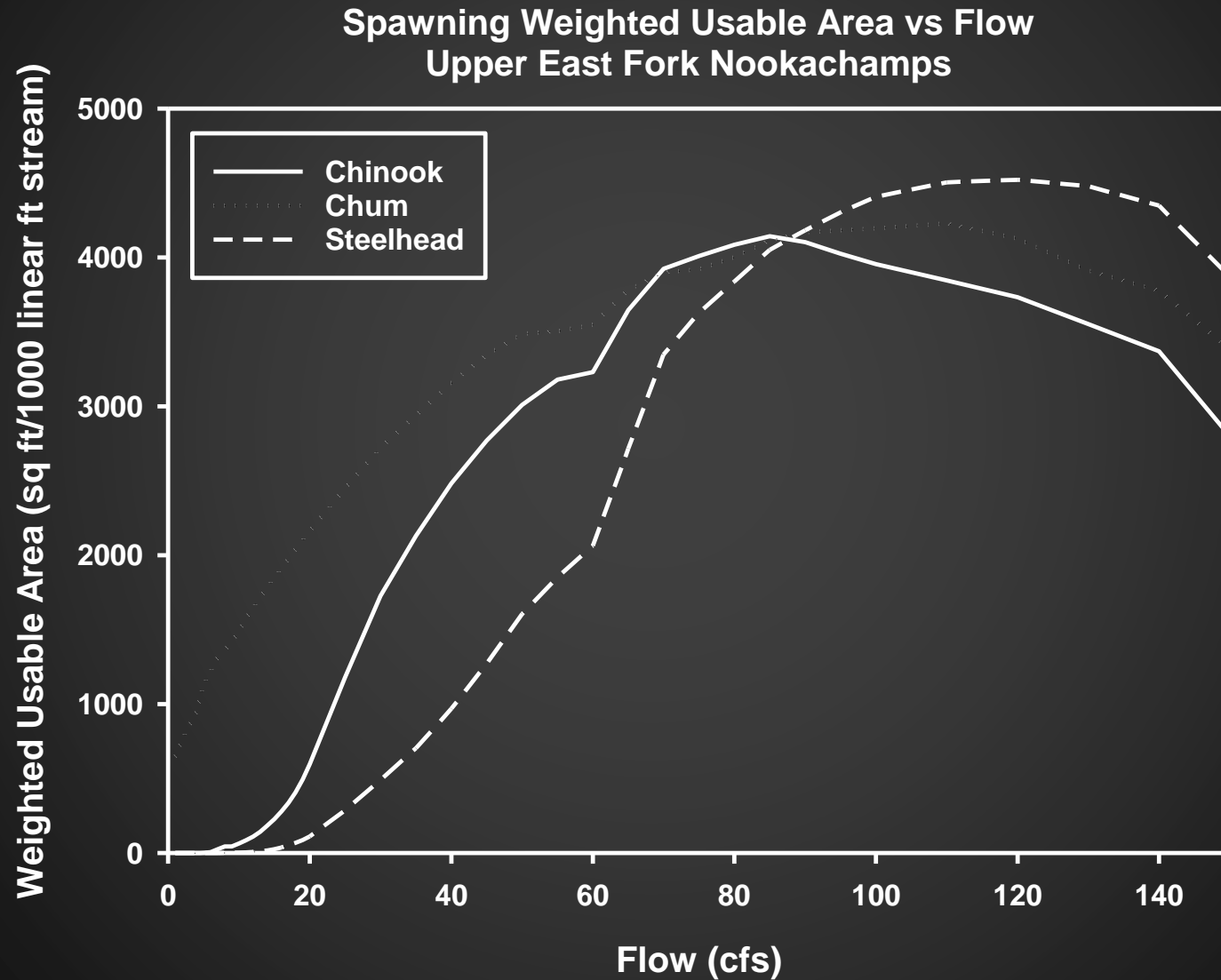
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How do suitable combinations of water depth and velocity associate with suitable bed material for different life stages of salmonids in the system of interest?

Approach:

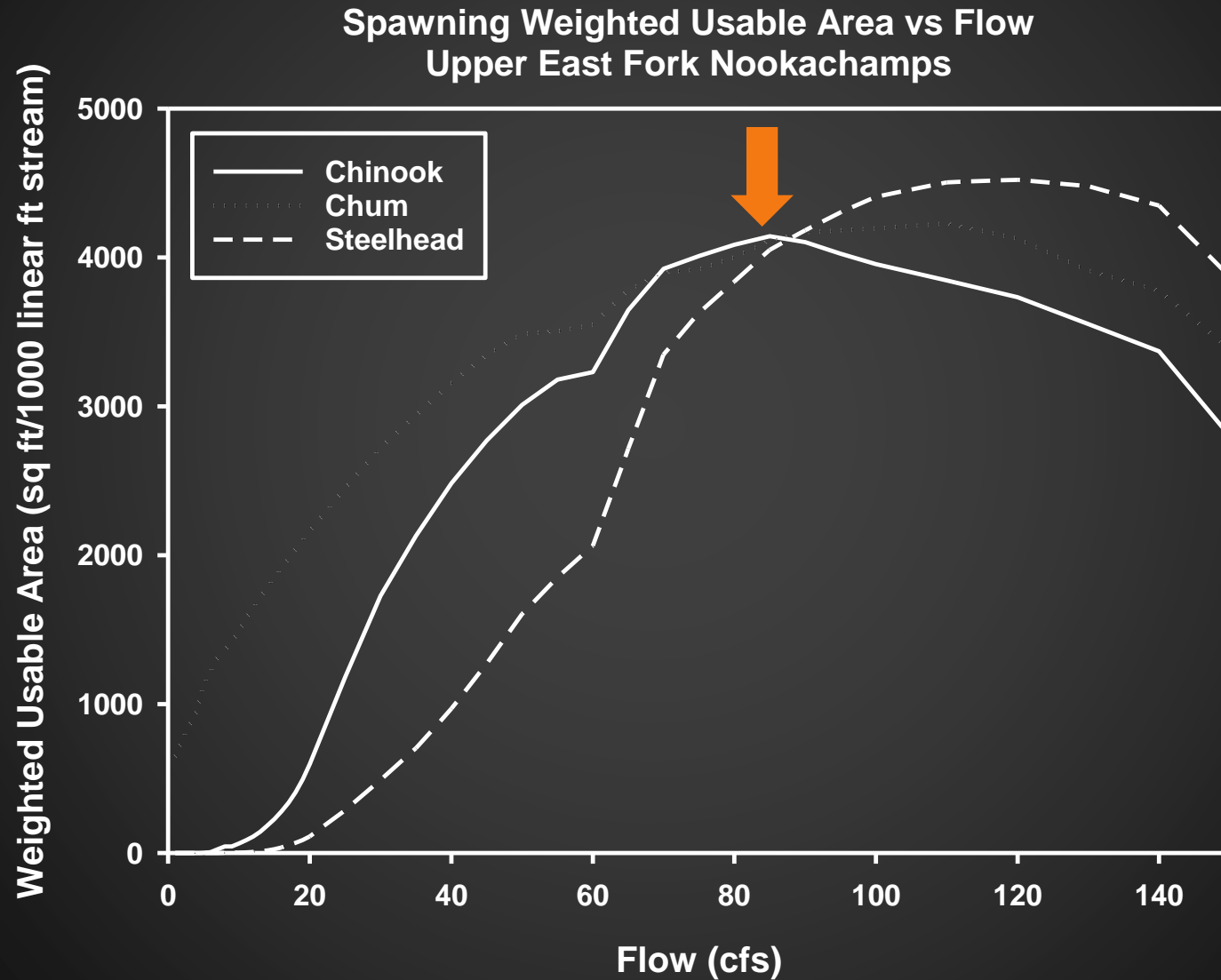
- IFIM/PHABSIM study
- Conduct hydraulic surveys at different discharges
- Model hydraulics
- Model habitat based on suitability of hydraulics
- Generate index of change in habitat relative to change in discharge, Weighted Usable Area

# Weighted usable area

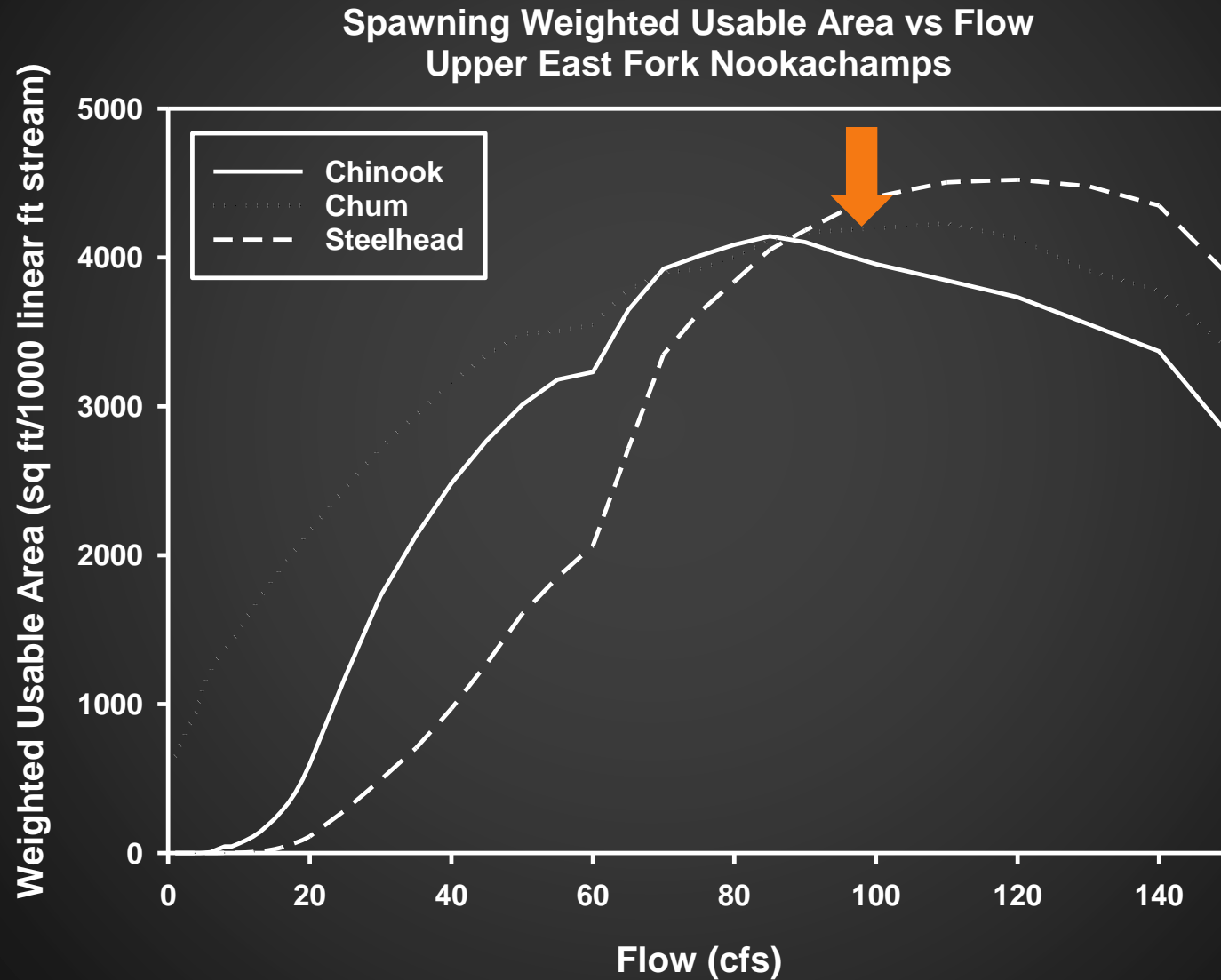




# Weighted usable area

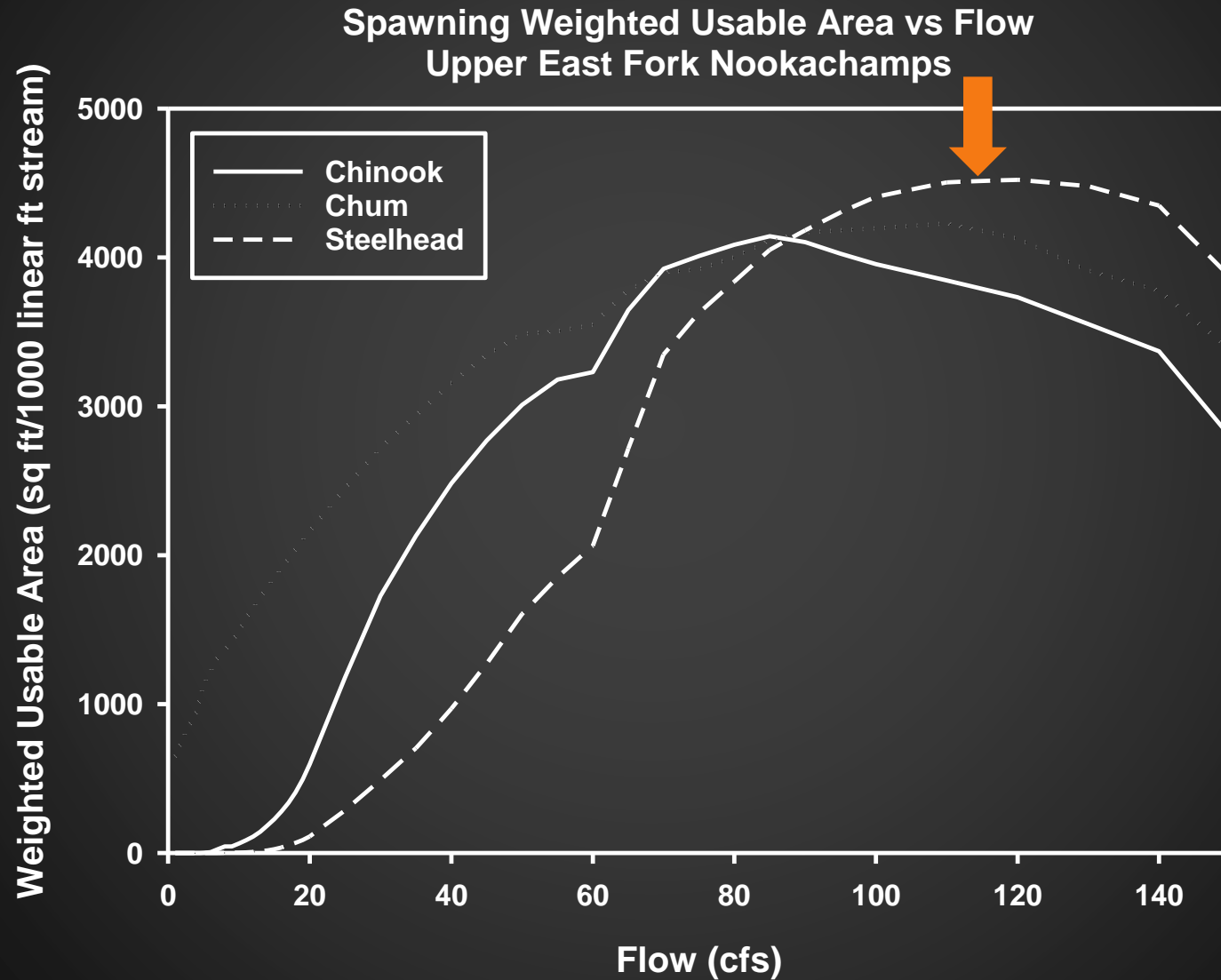


# Weighted usable area

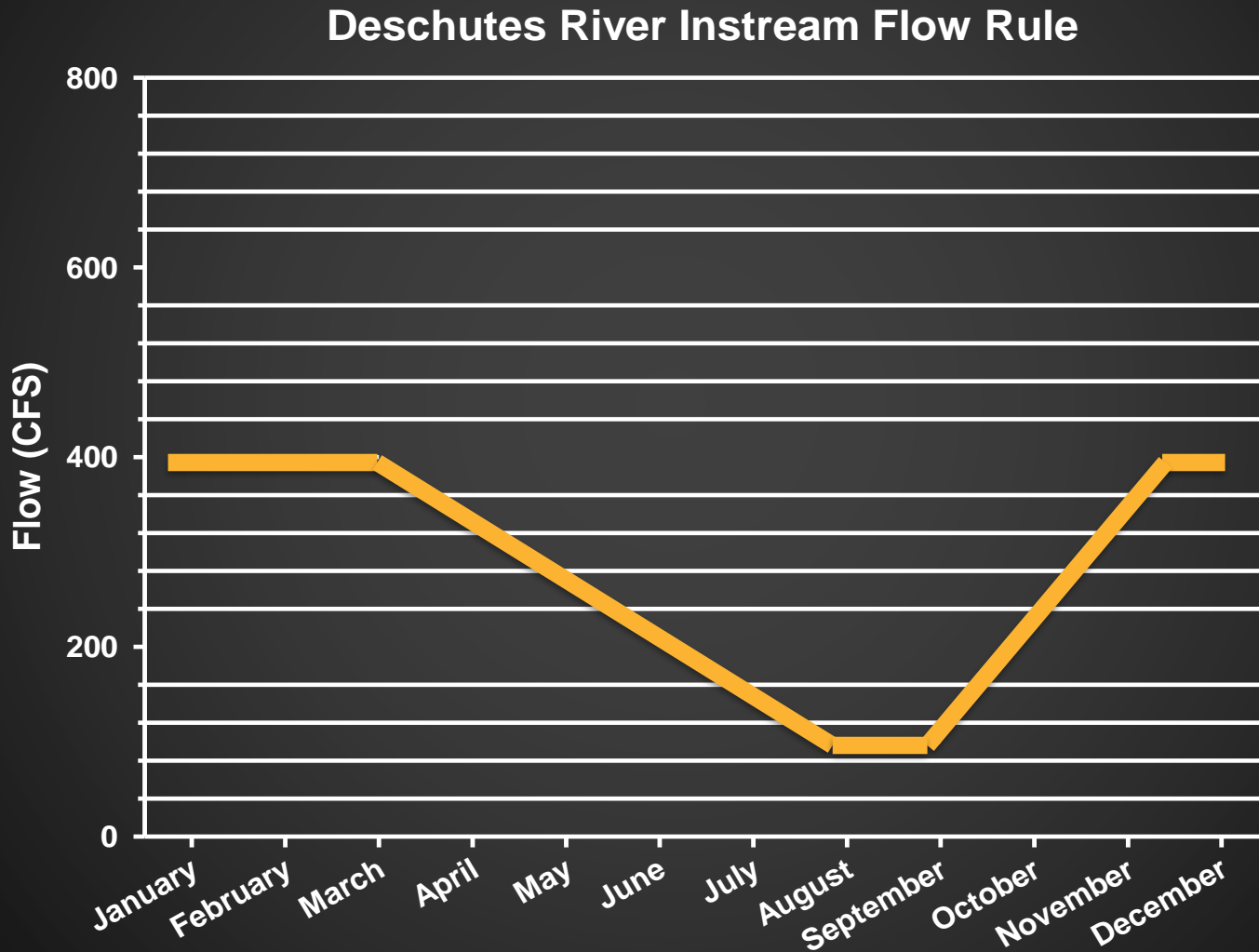




# Weighted usable area



# Instream Flows in Washington







# Summary

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- Legacy of instream flow protection
- Recommendations based on empirical knowledge
- Protective of fish and wildlife



